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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/867,628	05/31/2001	Keiichi Takanashi	2001-0689A	7179

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EXAMINER	
SONG, MATTHEW J	

ART UNIT	PAPER NUMBER
1765	

DATE MAILED: 04/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/867,628	TAKANASHI ET AL.
	Examiner	Art Unit
	Matthew J Song	1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 December 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the sixth paragraph of 35 U.S.C. 112:

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof..

2. It is noted that Claims 7-14 recite a "means for"; therefore the claims are treated under the guidelines set forth by 35 U.S.C 112 sixth paragraph.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 7-12 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Hofstetter et al (US 5,437,242).

Hofstetter et al. teaches an optical recording device (1) positioned outside the apparatus body (Fig 1) directed onto the surface of the melt (2) on which a reflection (4) caused by the rim (6), positioned on the inside of the apparatus (Fig 1), can be observed and functions as a mechanical reference mark, this reads on applicant's reference reflector. Hofstetter et al also teaches images from the optical recording device are sent to an image-processing device (7), which determines the distance of the rim to the melt surface, i.e. the level of the melt, taking into

account the geometrical data of the reference mark, this reads on applicant's level position measuring means, and outputs a signal to a control device (8) that determines deviations from the desired distance and generates a control signal for the drive motor (10), which changes the vertical position of the crucible with the aid of the raising and lowering mechanism (13), this reads on applicant's lifting device, so that the melt level is controlled to a constant value. (col 5, ln 25-68 and Fig 1) Hofstetter also teaches the image data supplied by the optical recording device also to be used for the determination of the crystal diameter (col 4, ln 7-15), this reads on applicant's diameter measuring means.

The control device **8**, which can by any known comparator, generates a control signal for the drive motor, this reads on applicant's lifting device, which changes the vertical position of the crucible. The examiner interprets the control device to read on applicant's level position controlling means comprising a crucible ascent speed calculating means because the instant disclosure does not teach the structure of the means; therefore the computer serving as the set point generator of the control device would be capable of performing calculations and is an equivalent structure to the crucible ascent speed calculating means, note Fuerhoff (US 5,882,402) below.

The examiner also interprets the control device (8) to read on applicant's limitation of crucible ascent speed adjustment value calculating means because the instant disclosure is silent to the structure of the crucible ascent speed adjustment value calculating means; therefore because the control device, which comprises a computer to determine deviations in melt level and generates a control signal to the drive motor to change the vertical position of the crucible would be capable of performing calculation and is an equivalent structure.

Also the control signal taught by Hofstetter reads on applicant's limitation of adjustment adding means because the drive motor adjusts the height of the crucible to the control signal.

The limitation of "said level position controlling means controls the level position of said crucible based on the ascent speed adjusted by the adjustment value when certain criteria are satisfied and said level position controlling means controls the level position of said crucible based on just the ascent speed when certain criteria are not satisfied" is view as intended use and Hofstetter et al teaches the structural limitation claimed by applicant and would be capable of performing the intended use. It is noted that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Also, claim 11 is also only further limiting by specifying the intended use of the optical device.

Referring to claim 9, Hoffstetter et al teaches the control device **8** is a known comparator and the instant disclosure is silent to the structure of the adjustment value addition proprietary judging means; therefore because the control device compares date as the adjustment value addition proprietary judging means the control device is interpreted by the examiner to be an equivalent structure.

Referring to claim 10 and 14, the instant disclosure is silent to the structure of the averaging means. Hoffstetter et al teaches the control device **8** comprises a computer and a computer is well known in art of being capable of performing simple calculation, such as averaging data, note Fuerhoff (US 5,882,402) below. Therefore, the control device is interpreted, by the examiner, to be an equivalent structure to the claimed averaging means.

Referring to claim 12, the instant disclosure is silent to the structure of the automatic updating means. Hoffstetter et al teaches the control device **8** comprises a computer and a computer is well known in art of being capable of performing simple functions, such as automatic updating, note Fuerhoff (US 5,882,402).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoffstetter et al (US 5,437,242) in view of LaBrie et al (US 6,030,451).

Hoffstetter et al teaches all of the limitations of claim 13, as discussed previously, except the optical device comprises a first camera and a second camera.

In a method of controlling the diameter of an ingot, note entire reference, LaBrie et al teaches using dual optical cameras focused on diametrically opposed edges of the meniscus of a growing crystal and the growth parameters can be adjusted to maintain a constant diameter (Abstract). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Hoffstetter et al with LaBrie et al's dual camera optical device to eliminate the negative effects of orbit, melt level and incorrect camera angles (col 3, ln 1-20).

Response to Arguments

7. Applicant's arguments, see page 2-3 of the remarks, filed on 12/29/2003, with respect to claim 7 have been fully considered and are persuasive. The 35 U.S.C 112 rejection of claim 7 has been withdrawn.

8. Applicant's arguments filed 12/29/2003 have been fully considered but they are not persuasive.

Applicants' argument that Hofstetter does not teach all of the limitations of claim 7 is noted but is not found persuasive. Applicants' allege that Hofstetter does not teach a a level position controlling means controls the level position of the crucible based on an ascent speed adjusted by an adjustment value when certain criteria are satisfied and the level position controlling means controls the level position of the crucible based on just the ascent speed when certain criteria are not satisfied. The Examiner admitted in the rejection that Hofstetter did not teach this feature, however the Examiner maintains that this feature is merely an intended use recitation and does not impart any structural difference between the instant invention and Hofstetter. Hofstetter discloses all of the structural components of the apparatus instantly claimed by applicants. The instantly claimed invention claims a diameter measuring means, a crucible ascent speed calculating means, a level position controlling means and crucible ascent speed adjustment calculating means. The computer taught Hofstetter reads on applicants' crucible ascent adjustment value means and crucible ascent speed adjustment value calculating means because applicants have admitted that a computer can be used, as evidence in the remarks filed on 12/29/2003 on pages 2-3. Also, Hofstetter teaches a image-processing device, this reads

on applicants level position measuring means, and the image data supplied by optical recording device can be used to determine the crystal diameter, this reads on applicants diameter measuring means. Therefore, all of the structural elements comprising the level position controlling means is taught by Hofstetter. The sole difference is the data manipulated by the level position controlling means. Claim 7, recites "said level position controlling means **controls** the level positon of said crucible based on...." In the last full paragraph. How the level position controls the level does not provide a structural limitation, which distinguishes the instant invention and Hofstetter because the level position controlling taught by Hofstetter is **capable** of performing the method of using **any** data to control the melt level, such a speed adjustment values.

In summary, Hofstetter discloses all of the structural limitations of the apparatus, including means which are capable of performing the claimed use. The sole difference is **how** the level position controls the level position based on data, which in an apparatus claim does not impart a structural difference. The claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Applicants' argument that this limitation is not intended use is noted but is not found persuasive. Applicants allege the limitation is not intended use because it does not describe what the level position controlling means is used for, rather describes specific characteristics of the level position controlling means. However, the limitation does not impart any structural limitations to the level position controlling means, merely specifying the way data is used by the

level position controlling means, which the Examiner maintains in a recitation of intended use. The level position controlling means, as taught by Hofstetter, is **capable** of controlling the level position of the crucible based on the ascent speed adjusted by the adjustment value when certain criteria are satisfied and the level position controlling means controls the level position of the crucible based on just the ascent speed when certain criteria are not satisfied because all the individual structural elements claimed by applicants is taught by Hofstetter.

If the claim were written as "said level position controlling means **for controlling** the level position of the crucible based on the ascent speed....", this would clearly be a recitation of intended use. Applicants have simply used unconventional language by claiming "said level position means **controls** the level position based on the ascent speed", which does not provide any additional structural limitation; therefore is interpreted as an intended use.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Castonguay et al (US 3,980,438) teaches the melt volume decreases by an amount equal to the crystal volume increase and by establishing a desired crystal diameter and pulling rate and hence the rate of crystal volume increase, it is a simple matter to calculate the rate at which the melt level is to fall in a crucible (col 5, ln 1-20).

Fuerhoff (US 5,882,402) teaches a control unit **51** includes a programmed computer **77b** for use in controlling the crucible drive unit as a function of processed signals from a camera **53**.

Also, a computer used for programming the crystal growth process automation (col 4, ln 50 to col 5, ln 67).

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J Song whose telephone number is 571-272-1468. The examiner can normally be reached on M-F 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Matthew J Song
Examiner
Art Unit 1765

MJS

NADINE G. NORTON
SUPERVISORY PATENT EXAMINER